SOME MORE NEW LEPIDOPTERA FROM S.-W. IRAN,

WITH THEIR LIFE HISTORIES

By

E. P. WILTSHIRE, F.R.E.S.

(*With a plate*).

A previous article ('New Lepidoptera from S.-W. Iran, *Journ. Bombay Nat. Hist. Soc.*, Vol. xlii, *Aug.* 1941) introduced various new species taken in 1940 in Fars, and mentioned that others were still *sub judice*. One of these is now here brought forward, together with three other new species bred from caterpillars found in Fars in 1941.

The present article, dealing with the life histories of the three latter, may be considered as No. 6 in my series 'Early Stages of Oriental Palearctic Lepidoptera', of which No. 5 appeared in *Journ. Bombay Nat. Hist. Soc.*, Vol. xliii, p. 621, April 1943.

I am indebted for useful advice to Mr. Louis Prout regarding the three Geometridae here described; he has examined a paratype of one of them and seen photos of the others. The genera, to which the two latter are here tentatively attributed, have not yet been authoritatively diagnosed; but since there is little doubt that the species are new, and the early stages can be described and illustrated, I felt it perhaps permissible to publish the discoveries to the best of my present ability, rather than, by waiting till the end of hostilities, run the risk of losing both the material and my records of it. Present world conditions naturally prevent international consultation of the sort possible and advisable before such a publication in peace time.

The present paper, however, by no means exhausts the tally of new species which could be brought forward from my Fars material. In particular, I have in mind a *Crocallis* and an autumnal *Chilena* (?), of whose early stages also I have notes and photos. I omit them here because I have been given to understand by Dr. Wehrli that W. Brandt has described or will shortly describe the former, and, in the latter case, because I have not been able to consult a Bombycid-specialist and I lack a male specimen too.

The plate illustrating the new species here described also illustrates the larvae of two of them and in addition illustrates the types of two previously described species or forms from my collection, and two Fars 'winter moths' for comparison with the three Geometridae here described.

The previous article mentioned in the first paragraph above should be consulted by readers interested in the floristic character of the Fars mountains where these discoveries have been made.

Cucullia faucicola sp.n.

In introducing this distinctive addition to the *lychnitis-verbasci* group of the genus *Cucullia*, a few words on the distribution of the group will not be amiss.

The group is characterised by a similarity in facies of the adult, by the strictly vernal phenology of the moth, by association of all its members with *verbascum* or *scrophularia* as foodplant, by the comparatively small difference

discernible in the male genitalia of its different species, by the specific distinctiveness of the larvae, and by the occurrence of distinct species with a limited range scattered here and there over the wide range of the two commonest and most generally distributed species, viz. :—*lychnitis* Ramb. and *verbasci* L.

From India I know of only one species having been previously recorded, namely *stigmatophora* Hamps., which is probably a close relative of *faucicola*; the type of the Indian species was taken at Simla. But I am able here to add for India a second species of this group, namely the common species *verbasci* L. which ranges from the Atlantic to the Pacific of the Old World; I observed its unmistakable larvae on *verbascum* in Kashmir at 5000 to 7000 ft. in May-June 1942. For the differences between *stigmatophora* and the Central Asian species *notodontina* Bours. and the Trans-Caspian species *Zerkowitzi* Bours., see Boursin—'Contribution à l'Etude des Noctuidae-Trifidae, No. XII' (*Revue Française d' Ent.*, 1 (1934). Quite possibly *lychnitis* also occurs in Palearctic India.

In the Middle East, the group is represented by both *lychnitis* and *verbasci*, and a number of more local species :—*lychnitis* occurs from the Mediterranean coast-level up on to mountains and plateaux of the hinterland, usually accompanied by *verbasci*. These two species have not been noted from the low lying Mesopotamian desert, which however produces the rare species *strigicosta* Bours., so far only taken from the Khaniqin region of Iraq. Both the commoner kinds occur in North Persia, but in the south of that country some climatic factor seems to limit their range, for I failed to find *verbasci* at all in Fars, and only found *lychnitis* in Fars in the 7,000 ft. high region of Ardekan, which is the southernmost point to which many species distinctive of the Middle East reach on the Zagros range. *Barthae* Bours. ranges from the Elburz range through Anatolia and Syria to Italy. *Xylophana* Bours. only occurs in Central Asia, together with *notodontina*, while *anceps* Stgr., originally described as ranging from Syria and Turkey as far as Turkestan has yet to be proved to occur so far afield, and at present it is best described as a species confined to the high mountains of N. Persia, Syria and Turkey. *Osthelderi* Bours. is only known from the Taurus Mts., Turkey. The mention of the other local Palearctic members of the group that occur further west is not necessary here.

Faucicola is easily distinguished in the imago from all the foregoing species and from the more westerly members of the group also by the clear delineation across its forewing of both the ante-median and post-median lines. It resembles *stigmatophora* in that the orbicular stigma is clearly visible by its paler colouring against a greyer background, but differs in that its reniform stigma is similarly clearly visible. Its larva is also easily distinguished from all the Midde East species of which the early stages are known; its nocturnal habits separate it from all others so far recorded from Persia except perhaps *anceps*, of which the early stages are still unknown; it is probably extremely local because of its close attachment to a foodplant of a very specialised habitat.

Male : Fore-wing :—whitish buff, heavily dusted with brown, especially along the cell, where the reniform and orbicular stigmata are left paler. 1st line, zigzag, dark brown with a whitish inner edge. Central shade, running from costa between stigmata, to inner margin, diffuse, regularly curved, visible throughout its length; outer line, curving inwards between the nervures, dark brown with whitish outer edging. Costa, dark grey except for whitish marks, which continue across the wing as the paler edging of the lines already described and for whitish dots marking the termination of nervures 10, 11 and 12. Hindwing :—sooty brown; the nervures darker; darker grey towards the termen. Span :—41 mm.

Holo-*Type* :—♂, hatched 8-2-42 from larvae found in March and April, 1941, in Tang-Ab gorge, near Firuzabad, Fars. (4000 ft.). In coll.m.

The larva is dirty green, infused dorsally with bluish grey. Dorsal line, yellowish white, interrupted at the somital joints. Subdorsal lines, faint, whitish green. Spiracles, yellow, black-rimmed, placed just above a yellowish white line interrupted in the somital joints. Setae, black. Dorsal markings, rudimentary, consisting only of two very faint black commas and four dots on each somite, arranged transversely to the central line. Head, dirty yellow brown, with black specks.

Foodplant, a species of *Scrophularia* with round fleshy dentate leaves and brittle stems, growing only on vertical cliff faces in gorges at 3000-4000 ft. in Fars, a zone intermediate between the true desert zone (with date-palms) and the high mountains and steppes. The larva hides by day in the clumps of this plant and can be shaken or beaten out into a tray. It feeds at night on the flowers and leaves.

Like other nocturnal feeders of the group, this larva's markings are rudimentary and not conspicuous like those of the diurnal feeders of the group which rest by day on the flowers and whose bright colouring is thought to be 'warning-colouring' denoting distastefulness.

Strigicosta, one of its nearest dwelling relatives, is a conspicuously marked day-feeding larva, to be found on a different species of *Scrophularia,* which grows on the tops of low desert hills, at 500-1000 ft., between the Mesopotamian desert and the Zagros range. Its back is marked with a series of heavy black crosses (my fuller description of this larva was given by Boursin in his original description of *strigicosta*, 'Beitrage zur Kenntnis der Agrotidae-Trifinae, XXIII, (Mitt. Muench. Ent. Ges. XXX Jahrg. 1940, Heft II).

Heterobapta plumellata n. gen & n. sp.

This genus (type :—*plumellata* mea) differs from *Bapta* Steph. (*Aleucis* Curt.) in the pectination of the male antenna. The type cannot be regarded as a *Thera* or as an aberrant *Erannis* because its female is fully winged. It cannot, either, be put into Wehrli's genus *Epitherina*, according to Prout, who has examined a male *plumellata,* because Wehrli describes that genus as having a well-developed tongue and 'vein SC'long anastomizing with cell', apart from a probable difference in frontal prominences and male antennae. *Megametopon* Alph., another neighbouring genus, is too little known to attribute this new species to it. The erection therefore of a new genus for the present specis is, according to Prout, 'forgivable'.

In facies, *plumellata* closely resembles *Bapta* (*Aleucis*) *distincta* H.S. (*pictaria* Curt.) ssp : *orientalis* Stgr. (perhaps a distinct species from *distinctata*), but *orientalis* and *distinctata* fly in spring and the males have simple antennae; *plumellata* is autumnal. The enlarged photo in the plate gives so good an idea of this species that a further detailed description is unnecessary here; the ochreous forewing is heavily speckled with black and marked by a clear black elongated cell-spot which is parallel with the outer margin; the teeth of the irregularly running postmedian line are also defined clearly in black in most examples. Antenna :—bipectinated in the male, simple in the female. Otherwise, the sexes closely resemble each other.

Span :—27-28 mm.

Holo-*Type* : ♂, Pir-i-Zan woods, (c. 7,000 ft.) 20-10-40. Fars.

Allo-*Type* : ♀, ditto. Both, in coll. mea.

Para-*Types* : ♂♂♀♀♀, Sineh Safid, (C. 6,500 ft.), 27-10-40, Fars.

One of these para-types has been seen by Mr. Prout; all are in my collection.

The early stages are not known to me.

(?) Erannis bahmana sp. n.

I should not be surprised if the female of this species proved to be fully winged, and in that case the species would have to be attributed to *Heterobapta* or *Epitherina* (see above), or a new genus and not to *Erannis.*

Bahmana can be distinguished from *plumellata* by its being vernal, and also, in facies, by the weaker definition of its cell-spot and other markings and its straighter-running post-median line. It flies at the same time as *rhodopoleos* but differs from it in foodplant :—I described the early stages of *rhodopoleos* in 'Early Stages of Oriental Palearctic Lepidoptera' (*Journ. Bombay Nat. Hist. Soc.,* April, 1943); its foodplants are *Prunus* and *Amygdalus*; *bahmana* is about the same size and shape as *rhodopoleos* but can be distinguished by the starting of the straighter running postmedian line nearer the apex of the forewing.

Male :—antenna, penicillate. Fore-wing, dirty brownish-white densely speckled with black, thus appearing grey. First line, indicated by slight grey shades on the costa and inner margin only. Postmedian line, dentate, with a blackish

outward point on each nervure, clearest near the apex, where it has a whitish outer edge, and running fairly straight across the fore-wing. Discal spot (cell-spot), faint. Termen, black, whitish edged. Fringes, grey, paler *basad*. Hindwing, paler grey, with one rather straight dentate line, most clear near the anal margin. Termen, black, interrupted. Fringes, brownish grey. Underside :—both wings, paler, with discal spots faint but traceable; forewing, postmedian-line clearly marked in black on costa near apex, where it starts at right-angles to the costa, then curves parallel to the margin and disappears; hindwing, postmedian line, dentate, traceable throughout. Termen, interrupted. Span, 27 mm.

A non-descript, weakly-marked little moth.

Holo-*Type* :—♂, hatched on 2-2-42 from a larva found at 6,000 ft. on Muk Pass (Gir-i-Bahman), Fars, (south of Shiraz), in coll. m.

Larva :—slender, grey, with small head; dorsal, subdorsal, and lateral lines, broad, darker grey, with darker edges. Dots black. A dorsal series of dark grey X marks. Spiracles, white, grey-rimmed, inconspicuous, placed above a whitish line edged below with a heavy black interrupted line. Underside, grey-dappled and less strikingly lined and marked, but with a pale sublateral and ventral line. Head, small, rather flattened, grey, dotted with black. (Figure 12).

Foodplant, the wild pistacia trees of the Fars steppe-woods (*Pistacia* (?) *khinjuk*); on the leaves.

The larva is full-grown in May; the moth emerges the following February, and probably also in March and April at high altitudes.

Several larvae of this species were extracted from the bill of an immature *Dryobates syriacus,* which nests in the wild pistacia trees; proof, if any were needed, that this Pied Woodpecker feeds not only on what it may find in the bark but on what it finds on the foliage of the trees.

Epitherina pistaciae sp.n.

Until a male be forthcoming, one cannot be sure to what genus to attribute this striking species. It agrees with *rhodopoleos* Werhli in season, in general shape of wings and in the female's being full-winged, but differs in foodplant and facies. The bold markings recall a *Boarmia* and at once distinguish it from the other Fars spring or autumn moths, *rhodopoleos, plumellata,* and *bahmana,* which resemble each other to some extent superficially. Its larval structure as well as that of the imago's thorax, etc., rule out the possibility of its really being a *Boarmia.*

Female :—antenna, simple. Forewing, pale buff, freckled with grey in median field. Basal line, heavy, black, with two sharp angles, one on the cell, the other actually touching the antemedian line, near the inner margin. Antemedian line, heavy, black, zigzag, but less extremely angled, and with its angles not conforming with those of the basal line. Postmedian line, curving basad between the nervures, which each here bear a fine white dot on the tooth edge of this line. Submarginal area, heavily shaded with grey, but the white dentate submarginal line running from apex to inner margin is distinctly traceable and is placed just posteriorly to a straighter dark shade. Termen :—a disconnected series of black circumflex marks. Fringes, grey, with a white middle line parallel to termen, but blacker basad. Hindwing, pale buff, heavily freckled with grey, more so towards anal margin. First line, darker grey, vaguely defined; second line, dark grey, curving basad between the nervures, and edged outwardly with whitish. Submarginal line, as on forewing, if rather more interrupted. Termen, as on forewing, but less interrupted. Fringes, as on forewing. Discal spot, weakly indicated. Underside :—whitish buff, freckled with grey, especially in submarginal area near forewing apex; discal spots visible on both wings, less clearly marked on hindwing. Span : 27 mm.

Holo-*Type* :—♀, hatched on 28-2-42, from a larva found in May at 6,000 ft. on the Muk Pass, south of Shiraz, Fars.

Larva :—slender, with small head; green, finely and faintly lined with yellow. Somital joints, yellow. There is a distincter white sublateral line just below the inconspicuous yellow spiracles. The lips of the anal orifice have a fine white edge. Head, small, rather flattened, glossy, pale green.

Foodplant, wild pistacia on the leaves. Full-grown in May.

The Plate.

Besides the above four new species, the plate also shows :—Fig. 1. A pale example of *E. rhodopoleos*. This species varies considerably, and melanic examples occur occasionally (I took one at Shapur Gorge on 28-2-41 (3,000 ft.) The commonest form was illustrated by Brandt in his article which appeared in the *Ent. Rundschau* 1938-9; Wehrli's original description appeared in the same periodical, in 1938, No. 31 (p. 354).

Fig. 3 is of a species which flies together with *H. plumellata* but cannot be confused with any other Fars 'winter moth'; its provisional determination is a South Zagros race, probably not named yet, of *Erannis bajaria* Schiff. The female is wingless, and I have bred several examples of this form. In captivity its emergence extends from November into January.

Fig. 9 is of the only known specimen of *Hemerophila* (*Megalycinia*) *engys* Wehrli, of which this rather poor photo was taken by me before transmitting it to Switzerland, where it still reposes. Being a Zagros autumnal moth, though from the North Zagros, it may be useful to readers to have an illustration of it in this article. The original description appeared in *Mitt. Munch. Ent. Ges.* xxix *Jahrg.* 1939. *Heft.* 1.

Fig. 10. *Eogenes alcides* ssp : *elama* mea ; a preliminary description appeared in *Journ. Bombay Nat. Hist. Soc., December* 1941; at the time of writing (October 1942) I believe the longer description has not yet been published.